



Published by
Newmont Waihi Gold Ltd
to keep you up to date
with what's happening in
and around
the projects.

July 22 2008

Update

NEWMONT
The Gold Company

Water, water, everywhere...

and yes, by the time we have
treated it, it is fit to drink.

It rains a lot in Waihi in winter. It can rain a lot in Waihi in summer too. In fact, because of our geographical location we get quite a bit of rain at any time, year round, and average over two metres in any given year.

Most mine sites around the world go looking for water. In Waihi, we have too much, or in technical terms the site 'operates with a net surplus or has a 'positive water balance'. We actually produce or 'mine' water.

Where does it come from? How is it treated? What is the quality of the water discharged from site? How is the quality monitored? Where does it go?

Reduce. Reuse. Recycle.

Not all water is discharged off site. Water is used in the gold and silver production process. It is also used to suppress dust on mine roads, to wash the conveyor belt and wash vehicles before they leave the site. Mine water is also used to irrigate plants and trees in areas such as around the pumphouse. Where possible, water is reused on site, with the aim of minimising the amount of water that is sourced from outside the mine.

On the web

For a detailed explanation
of water treatment visit
our website
www.marthamine.co.nz

Where does it come from?

There are four main sources of excess water on site.

- **Mine water.** This comes from Martha and Favona. It is one of the major sources of water on site, and is made up of groundwater inflow at both mines and surface water at Martha. This water is piped to the Water Treatment Plant.
- **Decant water.** This is water collected from (or 'decanted off') the surface of the tailings ponds. It is made up of rainwater and water from the tailings and is processed at the Water Treatment Plant.
- **Underdrainage water.** There is a system of underdrains beneath the Waste Rock Embankments that form the tailings pond bund. These drains collect any seepage from the tailings ponds and return it to the Water Treatment Plant.
- **Storm water runoff.** This is generated in various areas around the site. It is treated according to its quality. It may be channelled to collection or silt ponds, piped to the Water Treatment Plant, or released into the river. Diversion drains upstream of active areas capture and redirect clean runoff before it enters the site to reduce storm water entering the site.



The Water Treatment Plant at Baxter Rd. This is the only outside area on site that a hardhat is not required.

How is it treated?

Excess water on site can be derived from a number of sources. Some sources contain cyanide added during the gold and silver extraction process, and others do not.

Some may be turbid and need to spend time in a settling pond, while other water – particularly that from the open pit – may contain iron and manganese in solution. The water is treated depending on the source, its physical condition, and what it contains.

The Water Treatment Plant incorporates two distinct treatment stages:

- cyanide destruction process, using hydrogen peroxide (a strong oxidising agent) to destroy the cyanide, and copper sulphate as a catalyst to speed up the reaction.
- metal and trace ion removal process, using ferric chloride, lime and flocculants.

The Water Treatment Plant has the capacity to treat up to 15,000 cubic metres per day of non-cyanided water and 5,000 cubic metres per day of cyanided water.

Polishing ponds.
The final step
before water is
discharged into the
Ohinemuri River.

The annual
mid-winter
Walrus Swim is
held here.



What is the quality of the water discharged from site?

Water quality conditions are based on protecting both the aquatic biology of the river and downstream users. The conditions are based on the United States Environmental Protection Agency guidelines for the protection of instream aquatic life where such appropriate limits exist, and other guidelines where appropriate. In simple terms, the water we put back into the river is cleaner than the river water itself. We are very aware that we discharge water into what is now recognised as a world-class trout fishing river, and we want to keep it that way.

How is water quality monitored?

The monitoring of water quality and flows on site is extensive.

It includes: mine water, runoff from pit walls, decant water, collection pond water, silt pond water, groundwater boreholes and individual drains around the waste disposal area, and of course Water Treatment Plant monitoring.

This data is vital to the daily management of the site. It can affect, for example, decisions made about water types to be treated through the Water Treatment Plant. Real time monitoring means that at any time water can be redirected, held, or returned for further treatment.

Monitoring of waterways, particularly the Ohinemuri River, Ruahorehore, Mangatoetoe and Eastern Streams is an important part of the operation. This monitoring includes a biomonitoring programme checking fish, small stream dwellers like water boatmen, caddis flies and snails, as well as algae and sediment.

While much of the monitoring is required by the consent conditions, regular monitoring provides data for the most efficient operation of the site.



A discharge point on the Ohinemuri River. This photograph was taken last week. Water can just be seen bubbling up from the outflow pipe behind the rock at the right of the picture.

Where does the water go?

Water is discharged into the Ohinemuri River at approved discharge points near the process plant. Consents allow up to 20,000 cubic metres of water a day to be discharged, as long as the discharge does not exceed 15% of the river's total flow. In practice this means that when river flows are low in summer less water can be discharged than during high river flows in winter. Flow meters record treated water discharge volumes. River flows are monitored using river level recorders. Regular river gaugings are carried out to ensure that the river level provides an accurate indication of the river flow.



SafeCheck
Make it a Habit



designshed
DESIGN & CONSTRUCTION

www.marthamine.co.nz

www.newmont.com